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Services**Role of high molecular weight seminal vesicle proteins in eliciting the uterine inflammatory response to semen in mice.****Robertson SA, Mau VJ, Tremellen KP, Seamark RF**

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Mating evokes a characteristic pattern of molecular and cellular events in the rodent reproductive tract, including an infiltration of the endometrial stroma and uterine lumen with activated macrophages and granulocytes, which closely resembles a classic inflammatory response. Previous studies in mice indicate that these cellular changes are associated with, and are largely a consequence of, an upregulated synthesis and release of granulocyte-macrophage colony-stimulating factor (GM-CSF) from the uterine epithelium in response to seminal fluid. The aim of this study was to investigate further the origin and nature of the factors present in seminal fluid that trigger the GM-CSF response. It was found that the characteristic increase in uterine expression of mRNA encoding GM-CSF and release of GM-CSF bioactivity from uterine epithelial cells into the luminal cavity seen after mating with intact or vasectomized males was no longer evident in matings with male mice from whom the seminal vesicles had been surgically removed. The extent of inflammatory leucocyte infiltration into the endometrium was also reduced; the most notable effect was a complete absence of the exocytosis of neutrophils into the luminal cavity normally seen after matings with intact or vasectomized males. Bioassay of the GM-CSF output of oestrous endometrial cells after culture with crude or Sephacryl S-400 chromatographed fractions of seminal vesicle fluid showed that the GM-CSF stimulating activity was predominantly associated with protein moieties in seminal vesicle fluid of approximately 650,000 M(r) and 100,000-400,000 M(r). These data confirm the presence in seminal vesicle fluid of specific factors that initiate an inflammatory response in the uterus after mating through upregulating GM-CSF synthesis in the uterine epithelium. The significance of the cytokine release and cellular changes induced by seminal plasma for implantation of the conceptus and pregnancy outcome remain to be determined.

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